BULLETIN OF THE
PENNSYLVANIA
Department of Agriculture
HARRISBURG, PA.

Vol. 5. FEBRUARY, 1922. No. 2

GENERAL BULLETIN NO. 365

LIME REPORT

1921

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Bureau of Chemistry

Published Monthly by Direction of

FRED. RASMUSSEN, *Secretary of Agriculture*, Harrisburg, Pa.

Entered as Second Class Matter, March 22, 1918, at the Post Office at Harrisburg, Pa. under the Act of June 6, 1900. Acceptance for mailing at special rate of Postage provided for in Section 1103, Act of October 3, 1917, authorized on June 29, 1918.

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LETTER OF TRANSMITTAL.

PENNSYLVANIA DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY

Harrisburg, Pa., February 23, 1922.

Hon. Fred Rasmussen,
Secretary of Agriculture,
Harrisburg, Pa.

Dear Sir:—I have the honor to transmit herewith for your approval a report of the results of the inspection of Agricultural Lime products showing the analyses of samples obtained by the special Agents during the Spring and Fall seasons of 1921, representing the registered brands sold in the State.

It is recommended that this report be published in bulletin form for distribution.

Very respectfully,

JAMES W. KELLOGG,
Chief Chemist.

LIME REPORT

1921

INTRODUCTION

In accordance with the provisions of the law regulating "The sale for agricultural purposes of Crushed Limestone, Lime, Gypsum and related products," 131 official samples of such materials were selected from selling Agents throughout the State by the special sampling Agents during the Spring and Fall inspection seasons of 1921, which, together with reports covering each, were submitted for chemical analysis. One hundred and eighteen of these samples were found to represent 59 brands, registered by 48 different producing firms, and they were accordingly analyzed in order to determine the correctness of guarantees, which are required to be printed upon sacks or attached cards, or attached to bins from which bulk sales are made. Determinations were made for the amounts of calcium oxide, magnesium oxide and acid insoluble matter contained in each sample. In the case of Burnt Lime determinations were also made for carbon dioxide, which shows the amount of "core", or unburned limestone remaining in the product; in the case of Gypsum, for sulphur dioxide, and in the Pulverized Limestone and Artificial Carbonates of Lime, determinations were made for the degrees of fineness or the size of sieve mesh, through which the coarsest particles would pass upon sieving. These samples represented 7 kinds or classes of Lime Products and the Tables in which will be found the results of analyses and the classes and the number of samples of each received, are as follows: Table I, Pulverized Limestone, 39; Pulverized Oyster Shell, 4; Artificial Carbonate of Lime, 3; Marl, 3; Table II, Lime, 9; Hydrated Lime, 55; Table III, Gypsum, 5.

Of the total number of official samples analyzed, 32, or 27.1 per cent., were found deficient in calcium oxide and 6, or 5·1 per per cent., were deficient in magnesium oxide, to the extent of 1.00

per cent. or more below their respective guarantees. These deficiencies, however, were less in proportion than found in the samples examined during the two preceding years' brands, showing an improvement in the guarantees for the 1921 Lime Products. There were also 22 samples representing shipments where guarantees were not shown, as required, for calcium and magnesium oxides. Reports showing the results secured were sent to the manufacturers and to the selling Agents, from whom the samples were selected.

There were also 68 special samples received and analyzed for a fee of $1.00 each, which were received from producers and consumers of the State. Reports of the results obtained, as soon as completed, together with receipts for fees received, were also submitted.

In the subject matter, which follows, will be found Acknowledgments, Instructions Regarding Registration of Lime Products, Analyses of Special Samples and Required Labeling, a Discussion of the Results of Inspection, according to the foregoing classification, Average Analyses and Retail Prices, Lime Factors used in computing compositions, and Tables showing in detail the results of analysis, guarantees and retail selling prices, together with brand names and names of Manufacturers or Importers and selling Agents for each sample received.

ACKNOWLEDGMENTS.

Mr. V. B. Hausknecht, First Assistant Chemist, had charge of the reception and preparation of samples, immediate supervision of the analytical work and made duplicate analyses where required. The samples were analyzed by Messrs. Frank B. Williams, Claude R. Engle, and Leroy Pennypacker, Assistant Chemists; Mr. W. E. Huber, Clerk, assembled the data and arranged the tabulations for this report and the samples were prepared for analysis by Mr. W. W. Cassel, Laboratory Assistant.

REGISTRATIONS.

All Lime Products with the exception of air-slakes, kiln-slakes, gas-house lime and tanner's lime when sold as such, before being sold or offered for sale for agriculture purposes, are required to be registered, on or before January 1st, or before being placed on sale, for each calendar year. Before sales of Lime Products are made, therefore, requests should be made to the Bureau of Chemistry, Pennsylvania Department of Agriculture, Harrisburg, for blank registration forms in which should be inserted the following information: The brand or trade names or names of the Lime Products to be placed on sale, an affidavit of the number of tons sold, if any, during the preceding year, and a statement of the guarantees for each brand to be registered and sold. The application forms thus prepared should be sent directly to the Bureau of Chemistry accompanied by certified check, made payable to the STATE TREASURER, covering the amount of charges. The brands of Lime Products listed, if found in proper form, will be registered and a license issued, permitting their sale for the calendar year.

The guarantees required to be included in application and printed upon sacks or attached cards, or if sold from bulk attached to bins, are as follows: For ground or pulverized limestone, ground oyster shells, and artificial carbonate of lime; The minimum percentages contained of calcium oxide and its equivalent as calcium carbonate; for magnesium oxide, and its equivalent as magnesium carbonate and the degree of fineness or the number of sieve-mesh through which the coarsest particles or all of the material will pass upon sieving; for lime or burned lime, either in lump or ground form, hydrated lime, slaked lime, spraying lime and marls; the minimum percentages contained of calcium oxide and magnesnum oxide; for gypsum or land plaster the minimum percentages contained of calcium oxide and sulphur trioxide.

The fees required to be charged for registration are $5.00 for new brands, where no sales have been made during a previous year, and from $5.00 to $20.00 for each brand based upon the number of tons sold during a previous year as follows; 100 to 1,000 tons, $5.00; 1,000 to 5,000 tons, $10.00; and for an amount exceeding 5,000 tons, $20.00.

Where the composition of Lime Products in not known and for the purpose of arriving at proper guarantees to be given for registrations and for labeling, special samples will be analyzed for residents of the State for a fee of one ($1.00) dollar for each sample. Those wishing such analyses made should follow the directions outlined in the following paragraph.

ANALYSES OF SPECIAL SAMPLES.

Residents of Pennsylvania, both producers and consumers, may have samples of Lime Products analyzed for a fee of one ($1.00) dollar each for the purpose of making it possible to arrive at proper guarantees to be used, as well as to learn of the composition of the products being offered for sale, determinations being made for calcium and magnesium oxides and for acid insoluble matter, the equivalent calcium and magnesium carbonate figures being estimated in the case of limestone, artificial carbonate of lime and marls. Those wishing samples analyzed should proceed as follows:

Amount of Sample:—Where Lime Products are stored in bulk or bins portions should be carefully taken from as many different places as convenient and if in sacks portions should be drawn or selected from several different sacks, placed on a clean mixing cloth, table or floor, and carefully mixed to insure a uniform sample and as representative as possible of the entire lot or shipment. Approximately a 1 lb. sample should be selected by means of quartering and sub-dividing the mixture and placed in a suitable container, to be sent by express or parcel post.

Charge of Analysis:—A charge of one ($1.00) dollar is made for each sample analyzed and this fee may be submitted in the form of check, money order, or cash and should be inclosed in a letter requesting the analysis to be made, and both sample and letter addressed as follows:

Address:—The sample and letter inclosing fee should be addressed to the Bureau of Chemistry, Pennsylvania Department of Agriculture, Box 108, Harrisburg, Pa. The name of the sample or samples and the name of the sender should be plainly written on the package, or if more than one sample is submitted, a number, letter or name designating each should be included in order to avoid errors. As soon as possible after receipt of samples and fees, reports will be submitted to the sender showing the results secured, together with receipt for the amount of fees.

REQUIRED LABELING.

All sacks containing Lime Products are required to be printed or printed cards attached, or if sold in bulk a statement should be placed on the bins or delivered to purchaser, showing the number of net pounds, the brand or trade name or name of product, name and address of Manufacturer or Importer and the guaranteed analysis. Only single or minimum guarantees are permitted and the guarantees reguired for each class of lime products are as follows:

Pulverized limestone, ground oyster shells and artificial carbonate of lime: The minimum percentages contained of calcium oxide and its equivalent as calcium carbonate, of magnesium oxide and its equivalent as magnesium carbonate and the degree of fineness or the number of sieve-mesh through which the coarsest particles or all of the material will pass.

Lime or burned lime, either in lump or ground form, hydrated lime, slaked lime, spraying lime and marl: The minimum percentages contained of calcium oxide and magnesium oxide.

Gypsum or land plaster: The minimum percentages contained of calcium oxide and sulphur trioxide.

In order to more clearly illustrate the method of labeling, required for sacks or attached cards, or for cards to be attached to bins when sold in bulk, facsimile tags are included as follows:

For Ground Limestone, Ground Oyster Shells, and Artifical Carbonate of Lime.

○

100 lbs. Net.

DAUPHIN PULVERIZED LIMESTONE

Manufactured by

DAUPHIN LIMESTONE CO.,

Harrisburg, Pa.

Calcium Oxide, ...	50.00%
Calcium Carbonate Equivalent, ...	90.00%
Magnesium Oxide, ...	1.50%
Magnesium Carbonate Equivalent, ...	3.93%

Fineness—Sieve Mesh=No. 20.

For Lime, Hydrated and Slaked Lime and Marl.

○

100 lbs. Net.

DAUPHIN HYDRATED LIME

Manufactured by

DAUPHIN LIME COMPANY,

Harrisburg, Pa.

Calcium Oxide, ...	70.00%
Magnesium Oxide, ...	2.00%

DISCUSSION OF THE RESULTS OF INSPECTION

PULVERIZED LIMESTONE AND OYSTER SHELL, ARTIFICIAL CARBONATE OF LIME AND MARL.

Analyses in Table I.

The samples of Pulverized Limestone numbered 39 and included 13 brands, registered by 12 companies. They contained upon analysis, from 42.68 per cent. calcium oxide equivalent to 76.14 per cent. calcium carbonate, and from .38 per cent. magnesium oxide equivalent to .79 per cent. magnesium carbonate, to 54.56 per cent. calcium oxide equivalent to 97.33 per cent. calcium carbonate, and to 10.21 per cent. magnesium oxide equivalent to 21.35 per cent. magnesium carbonate, and averaged 50.57 per cent. calcium oxide equivalent to 90.21 per cent. calcium carbonate and 2.42 per cent. magnesium oxide equivalent to 5.06 per cent. magnesium carbonate. The acid insoluble matter varied from .52 per cent. to 8.94 per cent. and averaged 3.83 per cent. The size of the sieve mesh, through which all of each sample would pass upon sieving ranged from number 10 to number 50 and averaged fine enough to pass a number 18 mesh sieve. One sample of low calcium and high magnesium content was not included in estimating the foregoing averages because of its dissimilar composition. It contained 28.31 per cent. calcium oxide equivalent to 50.50 per cent. calcium carbonate and 19.77 per cent. magnesium oxide equivalent to 41.35 per cent. magnesium carbonate. There were 11 samples in which the contents of calcium oxide were found to be 1.00 per cent. or more below the guarantees, however, as will be noted, the guarantees were, as a rule, exceeded. The retail selling prices, reported as prevailing at the time the samples were selected, were from $5.75 to $14.20 and averaged $8.77 per ton.

Four samples of Pulverized Oyster Shells contained, upon analysis, from 44.05 per cent. calcium oxide equivalent to 78.58 per cent. calcium carbonate, and from .62 per cent. magnesium oxide equivalent to 1.30 per cent. magnesium carbonate, to 47.27 per cent. calcium oxide equivalent to 84.32 per cent. calcium carbonate and to 1.99 per cent. magnesium oxide equivalent to 4.16 per cent. magnesium carbonate and averaged 45.75 per cent. calcium oxide equivalent to 81.61 per cent. calcium carbonate and 1.07 per cent. magnesium oxide equivalent to 2.23 per cent. magnesium carbonate. The determinations for the degrees of fineness showed that the samples were fine enough to pass through a number 10 to number 20 an average fineness sufficient to pass a number 13 mesh sieve. With the exception of one sample the contents of calcium oxide were 1.00 per cent. or more below their guarantees. The acid insoluble matter varied from 10.18 to 13.20 and averaged 11.17 per cent. The retail selling prices were reported as being from $13.00 to $13.50 and averaged $13.13 a ton.

There were only 3 samples of Artificial Carbonate of Lime, obtained as by-products from manufacturing processes, not being directly prepared by grinding limestone rock. They were found, upon analysis, to contain from 46.53 per cent. calcium oxide equivalent to 83.01 per cent. calcium carbonate, and from 1.05 magnesum oxide equivalent to 2.20 per cent. magnesium carbonate, to 53.66 per cent. calcium oxide equivalent to 95.72 per cent. calcium carbonate, to 6.18 per cent. magnesium oxide equivalent to 12.92 per cent. magnesium carbonate, averaging 51.24 per cent. calcium oxide equivalent to 91.41 per cent. calcium carbonate, and 2.84 per cent. magnesium oxide equivalent to 5.95 per cent. magnesium carbonate. Determinations for fineness showed ranges of from a number 10 to a number 50, averaging a number 37 mesh sieve, through which all of each sample would pass upon sieving. The acid insoluble matter varied from .46 to 2.10 and averaged 1.04 per cent. They all exceeded their guarantees upon analysis. The retail selling prices were from $11.00 to $14.00, and averaged $13.00 a ton.

The 3 samples of natural deposit of lime, classified as Marl, contained from 44.71 per cent. calcium oxide equivalent to 79.76 per cent calcium carbonate, and from .47 per cent. magnesium oxide equivalent to .98 per cent. magnesium carbonate, to 52.34 per cent. calcium oxide equivalent to 93.37 per cent. calcium carbonate, and to .94 per cent. magnesium oxide equivalent to 1.97 per cent. magnesium carbonate and average 49.29 per cent. calcium oxide equivalent to 87.93 per cent. calcium carbonate, and .70 per cent. magnesium oxide equivalent to 1.46 per cent. magnesium carbonate. One sample was 1.00 per cent. lower in calcium oxide than guaranteed. The acid insoluble matter varied from 2.20 to 4.78, and averaged 3.52 per cent. The retail selling prices were from $8.50 to $12.00, and averaged $9.75 a ton.

LIME AND HYDRATED LIME.

Analyses in Table II

There were 9 samples of Lime or Burned Lime, the product resulting from the burning of Limestone Rock, received and analyzed, including 8 brands registered by 7 companies. Eight of these samples were classified as low magnesia grades, which were found, upon analysis, to contain from 54.89 to 90.00, averaging 75.41 per cent. calcium oxide, and from 1.16 to 7.86, averaging 2.77 per cent. magnesium oxide. The acid insoluble matter varied from 1.06 to 19.96, averaging 5.33 per cent. The carbon dioxide in these samples varied from .73 to 4.30, averaging 2.54 per cent., indicating that approximately from 1.66 per cent. to 9.78 per cent. of "core" or limestone remained unburned in the shipments represented by the samples. One sample was in excess of 1.00 per cent. below the guarantee in calcium oxide and classified as being deficient. The selling prices were from $6.00 to $15.00, and averaged $9.50 a ton. The 1 sample of high magnesia lime contained 35.34 per cent. calcium oxide, 23.73 per cent. magnesium oxide and 16.04 per cent. acid insoluble matter. The carbon dioxide amounted to 2.61 per cent., representing approximately 5.94 per cent. of "core" or unburned limestone. The retail selling price was $9.00 a ton.

The products classified as Hydrated Lime included 55 samples and 28 brands registered by 24 producing firms. Of this number 43 were classified as being low magnesia types and 12 as high magnesia or hydrated limes of dolomite origin. The low magnesia grades contained from 52.54 to 71.27, averaging 63.67 per cent. calcium oxide, and from .94 to 15.46, averaging 4.22 per cent. magnesium oxide. The acid insoluble matter varied from .42 to 12.86, and averaged 3.55 per cent. The retail selling prices were from $10.50 to $22.00, and averaged $14.81 a ton. The 12 samples of high magnesia brands contained from 41.23 to 47.36, and averaged 45.21 per cent. calcium oxide, and from 25.44 to 32.94, averaging 29.90 per cent. magnesium oxide and the acid insoluble matter varied from 1.10 to 6.60, and averaged 2.21 per cent. The retail selling prices were reported as being from $13.00 to $18.00, and averaged $15.35 a ton. There were 15 samples of hydrated lime, which were found to contain 1.00 per cent. or more less calcium oxide, and 6 less magnesium oxide than guaranteed.

GYPSUM OR LAND PLASTER.

Analyses in Table III.

The 5 samples of Gypsum, which were received, included 4 brands, put out by 3 different companies, and were found upon analysis to contain from 27.36 to 33.96, averaging 31.26 per cent. calcium oxide, and from 36.36 to 44.86, averaging 40.06 per cent sulphur trioxide, being equivalent to from 78.19 to 96.47, averaging 86.14 per cent. calcium sulphate. The acid insoluble matter varied from 1.40 to 13.40, and averaged 6.22 per cent. One of the samples was found deficient to the extent of more than 1.00 per cent. less calcium oxide than guaranteed. The retail selling prices reported were from $16.50 to $24.00, and averaged $20.90 a ton.

AVERAGE ANALYSES AND RETAIL PRICES.

The several brands of Lime Products were arranged according to their like compositions or grades and the results of analyses and selling prices were averaged and tabulated for comparisons as follows:—

CLASSES OF LIME PRODUCTS	Number of samples.	Moisture.	Calcium oxide.	Magnesium oxide.	Insoluble matter.	Price per ton.
		%	%	%	%	$
Pulverized limestone,	39	0.20	50.57	2.42	3.83	8.77
Pulverised oyster shell,	4	1.41	45.75	1.07	11.17	13.13
Artificial carbonate of lime,	3	0.46	51.24	2.84	1.04	13.00
Marl,	3	0.85	49.29	0.70	3.52	9.75
Lime, Low Magnesia,	8	....	75.41	2.77	5.33	9.50
High Magnesia,	1	....	35.34	23.73	16.04	9.00
Hydrated lime Low Magnesia	43	....	63.67	4.22	3.55	14.81
High Magnesia,	12	....	45.21	29.90	2.21	15.35
Gypsum,	5	2.43	31.26	*SO_3 40.06	6.22	20.90

*Sulphur trioxide equivalent to 86.14 per cent. as Calcium Sulphate.

A comparison of these average results, with those included in previous reports, will show some variations in average compositions or contents of calcium oxide and marked differences in average retail selling prices. The average contents of calcium oxide were close to those estimated for the brands received during the preceding year in the case of Pulverized Limestone, Artificial Carbonate of Lime and Hydrated Lime, slightly lower for Pulverized Oyster Shell, 2.37 per cent. higher for Marl, 4.73 per cent. higher for low magnesium burnt lime, considerably less in the case of one sample of high magnesium burnt lime and lower in calcium oxide in the case of Gypsum.

With the exception of the high magnesium burnt lime, the average selling values for 1921 were in excess of those reported for the 5 preceding years' brands. Compared with those received during 1920, these values for Pulverized Limestone, Oyster Shell and Artificial Carbonates of Lime were slightly higher, $2.50 less for Marl, slightly less in the case of low magnesium burnt lime, $5.50 lower in the case of high magnesium burnt lime, about the same for Hydrated Lime and Gypsum $2.90 a ton in excess of 1920 brands. While these average results, especially in the case of those where only a few samples were selected, cannot be considered as truly representative, they will be of interest in gaining a knowledge of the average compositions and selling prices for the materials found being offered for sale during 1921.

LIME FACTORS.

In estimating the composition of the several classes of lime products, it is necessary to employ certain factors, which are derived from the chemical formulas representing them. As previously shown determinations are made for calcium oxide, magnesium oxide, carbon dioxide and sulphur trioxide. Carbonate of Lime is represented by the formula $CaCO_3$, Carbonate of Magnesia by $MgCO_3$, Gypsum or Calcium Sulphate by $CaSO_4$, Hydrated Lime by $Ca(OH)_2$, and Magnesium Hydrate by $Mg(OH)_2$. To estimate the amounts of these forms or combinations the percentages of Calcium Oxide and Magnesium Oxide secured are multiplied by their respective factors. In order that these factors may be at hand for reference, they are included herewith as follows:—

Given.	Required.	Factor.
Calcium oxide,	Calcium hydrate,	1.321
Calcium oxide,	Calcium carbonate,	1.7839
Calcium oxide,	Calcium sulphate,	2.4265
Calcium hydrate,	Calcium oxide,	.7570
Calcium carbonate,	Calcium oxide,	.5606
Calcium sulphate,	Calcium oxide,	.4121
Magnesium oxide,	Magnesium hydrate,	1.4468
Magnesium oxide,	Magnesium carbonate,	2.0913
Magnesium hydrate,	Magnesium oxide,	.6912
Magnesium carbonate,	Magnesium oxide,	.4782
Calcium oxide,	Sulphur trioxide,	1.4265
Carbon dioxide,	Calcium carbonate,	2.2757
Carbon dioxide,	Magnesium carbonate,	1.9159
Calcium carbonate,	Carbon dioxide,	.4394
Sulphur trioxide,	Calcium sulphate, (Gypsum),	2.1504

TABLE I.—PULVERIZED LIMESTONE AND OYSTER

Chemist's number.	Name of Manufacturer and Brand	Sample Taken From—	Moisture.
	PULVERIZED LIMESTONE THE BESSEMER LIMESTONE & CEMENT CO., YOUNGSTOWN, OHIO.		%
C-909	Bessemer Pulverized Limestone,	Reynoldsville Hardware Co., Reynoldsville.	0.12
C-892	Bessemer Pulverized Limestone,	S. Leroy Tuttle, Franklin,	0.05
	THE CARBON LIMESTONE CO., YOUNGSTOWN, OHIO.		
C-886	Carbon Agricultural Limestone,	W. S. Minnion, Meadville,	0.10
C-965	Carbon Agricultural Limestone,	Wm. H. Roadhouse, Greenville,	0.14
C-891	Carbon Agricultural Limestone,	S. Leroy Tuttle, Franklin,	0.15
	F. E. CONLEY STONE CO., UTICA, N. Y.		
C-926	Raw Ground Limestone, (Ground Limestone).	G. R. Clark, Scranton,	0.05
C-898	Raw Ground Limestone, (Ground Limestone).	C. P. Matthews & Son, Moscow,	0.11
C-898	Raw Ground Limestone, (Ground Limestone).	A. E. Woodruff & Son, Wysox,	0.07
	THE FRANKLIN MANUFACTURING CO., FRANKLIN, PA.		
C-894	Franklin Brand Agricultural Lime,	E. H. Gibner, Stoneboro,	2.17
C-966	Franklin Brand Agricultural Lime,	I. H. Shoemaker, Greenville,	1.28
	LEHIGH PULVERIZED LIMESTONE CO., ALLENTOWN, PA.		
C-946	Lehigh Pulverized Limestone,	J. A. Werner, Weatherly,	0.01
	LIMESTONE PRODUCTS CORPORATION OF AMERICA, NEWTON, N. J.		
C-973	Lime Crest Brand Pulverized Limestone,	A. H. White, Monrocton,	0.05
	MICHIGAN LIMESTONE & CHEMICAL CO., INC., BUFFALO, N Y.		
C-897	Calcite Brand Michigan Limestone,	Bessemer Coal & Supply Co., Greenville.	0.07
C-899	Calcite Brand Michigan Limestone,	Farmers & Consumers Commercial Union, Troy.	0.05
C-856	Calcite Brand Michigan Limestone,	J. A. Gardner, Moscow,	0.05
C-962	Calcite Brand Michigan Limestone,	John M. Good, Pine Grove,	0.09
C-925	Calcite Brand Michigan Limestone,	A. L. Knob, Rossville,	0.06
C-879	Calcite Brand Michigan Limestone,	J. Frank Lutz, Stevens,	0.05
C-914	Calcite Brand Michigan Limestone,	Joseph Mengle, Hamburg,	0.03
C-919	Calcite Brand Michigan Limestone,	L. H. Miller, Greentown,	0.06
C-907	Calcite Brand Michigan Limestone,	Lowry Schoening, New Millport,	0.05
C-861	Calcite Brand Michigan Limestone,	A. E. Seaman, Factorville,	0.07
C-881	Calcite Brand Michigan Limestone,	Amos Snyder, Hegins,	0.05
C-882	Calcite Brand Michigan Limestone,	J. C. Walker & Sons, Gap,	0.05
C-922	Calcite Brand Michigan Limestone,	White & Sons, Galeton,	0.05
	NEW CASTLE LIME & STONE CO., NEW CASTLE, PA.		
C-963	New Castle Brand Pulverized Limestone,	R. J. Jordon, Volant,	0.12
C-871	New Castle Brand Pulverized Limestone,	Thompson & Glenn, Butler,	0.13
	THE OHIO FARMERS LIME CO., CLEVELAND, OHIO.		
C-893	Ohio Farmers Lime,	Clyde Duffee, Oil City,	0.52
C-868	Ohio Farmers Lime,	Geo. B. Sprowls, Claysville,	0.72
C-885	Ohio Farmers Lime,	Titusville Supply Co., Titusville,	0.57

SHELL, ARTIFICIAL CARBONATE OF LIME AND MARL.

Calcium Oxide.		Calcium Carbonate.		Magnesium Oxide.		Magnesium Carbonate.			Fineness.						
									Coarsest Particles Pass Sieve Mesh No.—		Amount of Sample Passing Sieve Meshes.				
Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Insoluble Matter	Found.	Guaranteed.	10 mesh.	50 mesh.	100 mesh.	Selling price per ton at place of selection.	Chemist's number.
%	%	%	%	%	%	%	%	%	No.	No.	%	%	%	$	
50.03	50.45	89.25	------	0.69	0.89	1.44	------	7.20	10	10	100.0	71.9	62.0	7.75	C-909
51.10	50.45	91.16	------	0.83	0.89	1.74	------	5.20	10	10	100.0	84.1	70.2	7.00	C-892
48.93	47.60	87.29	85.00	0.76	0.42	1.59	0.75	7.86	10	------	100.0	90.6	79.2	7.00	C-886
49.66	53.65	88.59	------	0.38	0.22	0.79	------	7.28	10	10	100.0	84.4	66.9	6.50	C-965
49.20	53.65	87.77	------	0.87	0.22	1.82	------	8.40	10	10	100.0	90.2	79.3	7.00	C-891
50.11	53.54	89.39	95.50	2.56	1.10	5.35	2.30	5.04	10	10	100.0	35.9	27.4	10.00	C-926
48.29	53.54	86.14	95.50	2.93	1.10	6.13	2.30	6.56	10	10	100.0	42.8	32.2	9.50	C-857
50.69	53.00	90.43	95.50	1.47	1.30	3.07	2.30	6.22	10	------	100.0	44.9	34.3	8.50	C-898
45.21	49.48	80.65	------	6.95	4.71	14.53	------	0.70	10	10	100.0	77.1	61.1	------	C-894
47.35	49.48	84.47	------	5.89	4.71	12.32	------	0.52	30	10	100.0	99.9	99.8	10.00	C-966
28.31*	------	50.50*	47.43	19.77*	------	41.35*	40.75	8.70	20	------	100.0	92.2	85.7	5.80	C-946
50.00	53.00	89.20	96.00	2.50	1.50	5.23	3.00	5.40	30	------	100.0	99.8	99.7	------	C-973
54.56	54.50	97.33	97.00	0.83	1.00	1.80	2.00	0.90	20	------	100.0	69.3	53.7	8.00	C-897
54.48	54.50	97.19	97.00	0.83	1.00	1.74	2.00	0.94	20	------	100.0	66.5	51.7	------	C-899
54.40	54.50	97.04	97.00	1.00	1.00	2.09	2.00	1.20	20	------	100.0	68.3	56.0	9.40	C-856
53.99	------	96.31	97.00	0.75	------	1.57	2.00	1.38	10	------	100.0	66.8	53.2	------	C-962
54.27	54.50	96.81	97.00	0.81	1.00	1.69	2.00	1.18	10	------	100.0	71.0	56.2	9.75	C-925
54.55	54.50	97.31	97.00	0.96	1.00	2.01	2.00	0.74	20	------	100.0	68.7	55.9	10.00	C-879
54.36	54.50	96.97	97.00	0.79	1.00	1.65	2.00	1.04	10	------	100.0	69.2	60.4	------	C-914
54.39	54.50	97.03	97.00	0.62	1.00	1.30	2.00	0.72	10	------	100.0	71.9	59.0	8.75	C-919
54.44	------	97.12	------	0.91	------	1.90	------	1.17	20	------	100.0	68.6	55.5	7.00	C-907
53.76	54.50	95.90	97.00	0.67	1.00	1.40	2.00	1.20	20	------	100.0	69.6	55.2	9.00	C-861
54.41	54.50	97.06	97.00	0.98	1.00	2.05	2.00	0.94	20	------	100.0	71.1	58.4	------	C-881
54.43	54.50	97.10	97.00	0.87	1.00	1.82	2.00	1.22	20	------	100.0	68.5	52.7	11.00	C-882
53.92	54.50	96.19	97.00	0.67	1.00	1.40	2.00	1.50	10	------	100.0	66.9	53.4	11.17	C-922
48.51	46.75	86.54	85.00	0.77	0.70	1.61	1.40	8.94	20	10	100.0	94.0	77.5	5.75	C-963
49.48	------	88.27	------	0.89	------	1.86	------	7.60	30	10	100.0	92.0	76.0	8.25	C-871
47.27	------	84.32	------	6.70	------	14.01	------	2.20	10	10	100.0	82.4	74.9	12.00	C-898
45.70	------	81.52	------	7.57	------	15.83	------	1.28	10	------	100.0	83.1	68.0	13.00	C-868
46.49	------	82.93	------	6.20	------	12.97	------	1.46	10	------	100.0	82.8	72.8	10.75	C-885

*Excluded from average.

TABLE I.—PULVERIZED LIMESTONE AND OYSTER SHELL,

Chemist's number.	Name of Manufacturer and Brand	Sample Taken From—	Moisture.
	PALMER LIME & CEMENT CO., NEW YORK, N. Y.		%
C-928	Challenge Brand Limestone Flour,	C. E. Starr, Three Springs,	0.06
C-924	Franklin Brand Pulverized Limestone,	S. A. Fishburn, Penbrook,	0.01
C-953	Franklin Brand Pulverized Limestone,	E. H. Keen & Son, Parkesburg,	0.02
	SOLVAY PROCESS CO., SYRACUSE, N. Y.		
C-912	Solvay Pulverized Limestone,	Dairy Association, Montrose,	0.23
C-972	Solvay Pulverized Limestone,	E. H. Johnston, Ulster,	0.08
C-927	Solvay Pulverized Limestone.	D. Z. Miller, Ranson,	0.12
C-859	Solvay Pulverized Limestone,	Summit Lumber Co., Clark Summit,	0.12
C-974	Solvay Pulverized Limestone,	A. E. Woodruff & Son, Wysox,	0.12
	STANDARD LIME & STONE CO., BALTIMORE, MD.		
C-956	Standard Pulverized Limestone,	Sheehan Brothers, Landenberg,	0.12
		Average,	0.20
	PULVERIZED OYSTER SHELL.		
	THE POTOMAC POULTRY FOOD CO., INC., BALTIMORE, MD.		
C-971	Oyster Sheel Lime,	T. Bender & Son, Muncy Valley,	0.77
C-960	Oyster Shell Lime,	Boettinger & Wargo, Danville,	0.45
C-869	Oyster Shell Lime,	J. P. Oesterlinger & Son, Butler,	0.64
C-854	Oyster Shell Lime,	N. F. Richards, Schellsburg,	3.80
		Average,	1.41
	ARTIFICAL CARBONATE OF LIME.		
	THE COLUMBIA PRODUCTS CO., CLEVELAND, OHIO.		
C-872	Plant Lime,	Chas. W. King, Cooperstown,	0.71
	NEW YORK & PENNSYLVANIA CO., JOHNSONBURG, PA.		
C-910	Nypen Agricultural Precipitated Lime,	Gibson-Clark Co., Indiana,	0.40
C-870	Nypen Agricultural Precipitated Lime,	J. P. Oesterlinger & Son, Butler,	0.28
		Average,	0.46
	MARL.		
	ALBA MARL LIME CO., CHARLESTOWN, W. VA.		
C-853	Alba Marl,	W. S. Ake, Osterburg,	1.10
	CONNEAUT LAKE MARL CO., HARMONSBURG, PA.		
C-964	Palmarl (Agricultural Marl).	I. L. Hazen, Hadley,	1.05
	VALLEY LIME MARL CO., BALTIMORE, MD.		
C-951	Valley Lime Marl,	Edw. W. Rupert, Oxford,	0.40
		Average,	0.85

ARTIFICIAL CARBONATE OF LIME AND MARL—Concluded.

Calcium Oxide.		Calcium Carbonate.		Magnesium Oxide.		Magnesium Carbonate.		Insoluble Matter.	Fineness.					Selling price per ton at place of selection.	Chemist's number.
									Coarsest Particles Pass Sieve Mesh No.—		Amount of Sample Passing Sieve Meshes.				
Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed		Found.	Guaranteed.	10 mesh.	10 mesh.	100 mesh.		
%	%	%	%	%	%	%	%	%	No.	No.	%	%	%	$	
42.68	------	76.14	92.96	10.21	------	21.35	3. 6.	3.92	50	------	100.0	100.0	99.8	14.20	C- 928
49.74	50.00	88.73	96.50	4.84	3.50	10.12	------	2.00	30	------	100.0	99.9	99.6	10.00	C- 924
44.88	50.00	80.06	96.50	6.92	3.50	14.45	------	5.84	50	------	100.0	100.0	99.8	8.00	C- 953
49.04	50.04	87.48	89.25	1.88	2.50	3.93	5.23	6.05	20	------	100.0	86.8	72.8	------	C- 912
50.24	50.00	89.62	89.25	2.17	2.50	4.54	5.23	4.70	10	------	100.0	83.2	65.5	7.75	C- 972
49.50	50.00	88.30	89.25	2.04	2.50	4.27	5.23	6.56	20	------	100.0	87.3	74.0	6.00	C- 927
48.99	50.00	87.39	89.25	2.28	2.50	4.77	5.23	6.54	30	------	100.0	96.0	86.0	6.70	C- 859
50.22	50.00	89.59	89.25	2.25	2.50	4.71	5.23	5.20	30	------	100.0	89.4	82.7	8.00	C- 974
52.42	50.00	93.51	90.00	0.69	------	1.44	------	4.06	10	------	100.0	73.0	50.2	7.00	C- 956
50.57	------	90.21	------	2.42	------	5.06	------	3.83	18	------	100.0	78.4	67.1	$8.77	
45.37	------	80.94	------	0.80	------	1.67	------	10.80	10	------	100.0	58.8	37.5	13.00	C- 971
47.27	50.43	84.32	90.00	0.62	0.41	1.30	0.85	10.18	10	14	100.0	52.1	32.7	13.00	C- 960
46.32	50.43	82.63	90.00	0.87	0.41	1.82	0.85	10.50	20	14	100.0	70.3	45.2	13.50	C- 869
44.05	50.43	78.58	90.00	1.99	0.41	4.16	0.85	13.20	10	------	100.0	61.9	44.2	13.00	C- 854
45.75	------	81.61	------	1.07	------	2.23	------	11.17	13	------	100.0	60.8	39.9	$13.13	------
46.53	45.00	83.01	------	6.18	5.00	12.92	------	2.10	10	10	100.0	83.2	66.4	11.00	C- 872
53.53	53.50	95.49	95.50	1.30	0.75	2.72	1.57	0.56	50	20	100.0	100.0	98.8	14.00	C- 910
53.66	53.50	95.72	95.50	1.05	0.75	2.20	1.57	0.46	50	20	100.0	100.0	96.8	14.00	C- 870
51.24	------	91.41	------	2.84	------	5.95	------	1.04	37	------	100.0	94.4	87.3	$13.00	------
50.83	50.00	90.68	90.00	0.69	------	1.44	------	3.60	------	------	------	------	------	8.75	C- 853
44.71	50.82	79.76	------	0.94	0.60	1.97	------	4.78	------	------	------	------	------	8.50	C- 964
52.34	50.00	93.37	------	0.47	------	0.98	------	2.20	------	------	------	------	------	12.00	C- 951
49.29	------	87.93	------	0.70	------	1.46	------	3.52	------	------	------	------	------	$9.75	------

TABLE II.—LIME

Chemist's number.	Name of Manufacturer and Brand	Sample Taken From
	LIME	
	(LOW MAGNESIA)	
	AMERICAN LIME & STONE CO., TYRONE, PA.	
C-905	No. 1 Agricultural Lime,	E. M. Fullington's Sons, Clearfield,
	BOWER BROTHERS, MONTOURSVILLE, PA.	
C-941	Blue Stone Lump Lime,	Bower Brothers, Montoursville,
	HENRY KILGUS, MUNCY, PA.	
C-908	Muncy Lump Lime,	H. A. Cathcart, Olanta,
	ROSE POINT STONE & LIME CO., NEW CASTLE, PA.	
C-903	Rose Point Lime Ground Burnt Lime,	Thos. J. Neefe, Coudersport
	JOS. M. WALKER, SALONA, PA.	
C-862	Run of Kiln Agriculture Lime,	Jos. M. Walker, Salona
C-945	Run of Kiln Agriculture Lime,	Jos. M. Walker, Salona,
	WEST BRANCH LIME CO., WILLIAMSPORT, PA.	
C-942	Clover Leaf Ground Lime,	West Branch Lime Co., Williamsport,
C-940	Clover Leaf Lump Lime,	West Branch Lime Co., Williamsport,
		Average
	LIME	
	(HIGH MAGNESIA)	
	LUTHER KELLER CO., SCRANTON, PA.	
C-858	Coal Burnt Lime,	W. F. Kindraw, Moscow,
	HYDRATED LIME	
	(LOW MAGNESIA)	
	AMERICAN LIME & STONE CO., TYRONE, PA.	
C-904	Agricultural Hydrate (H-O) of Lime for Agricultural Use.	E. M. Fullington's Sons, Clearfield,
C-863	Agricultural Hydrate (H-O) of Lime for Agricultural Use	Ellis W. Hyman, Jersey Shore,
	J. E. BAKER CO., YORK, PA.	
C-975	Susquehanna Brand Hydrated Lime,	Geiss & McBride, Elizabethtown,
	THE CENTRAL CHEMICAL COMPANY, HAGERSTOWN, MD.	
C-947	Gro-All Hydrated Lime,	J. J. Gerhard, Weatherly,
	CENTRE COUNTY LIME CO., BELLEFONTE, PA.	
C-901	Pure Hydrated Drilling Lime,	E. A. Slagle, Paxinos,
	DIETRICK BROTHERS, READING, PA.	
C-938	Dietrick's Excelsior Brand Hydated Lime,	S. C. Updegraff & Son, Williamsport,
C-958	Dietrick's Gold Medal Brand Hydrated Lime.	E. A. Slagle, Paxinos,

AND HYDRATED LIME.

Calcium Oxide.		Magnesium Oxide.		Carbon Dioxide	Insoluble Matter.	Selling price per ton at place of selection.	Chemist's number.
Found.	Guaranteed.	Found.	Guaranteed.				
%	%	%	%	%	%	$	
75.11	-------------	3.16	-----------	1.35	1.38	15.00	C- 905
80.05	-------------	7.36	-----------	3.50	1.50	6.00	C- 941
65.08	-------------	1.45	-----------	1.90	9.13	-----------	C- 908
54.30	75.00	1.30	1.00	4.30	19.96	14.50	C- 903
90.00	-------------	1.47	-----------	0.73	1.06	7.00	C- 862
86.76	-------------	1.16	-----------	2.35	2.50	7.00	C- 945
71.46	-------------	3.30	-----------	4.15	5.10	11.00	C- 942
80.01	75.00	2.46	8.00	3.05	1.56	6.00	C- 940
75.41	-------------	2.77	-----------	2.54	5.38	$9.50	-----------
35.34	-------------	28.72	-----------	2.61	10.04	9.00	C- 858
65.99	-------------	2.54	-----------	-----------	3.99	11.25	C- 904
69.59	65.00	1.33	2.00	-----------	1.00	13.75	C- 863
64.14	50.70	7.84	2.10	-----------	1.35	13.50	C- 975
69.69	70.00	3.01	2.00	-----------	1.80	16.50	C- 947
66.92	67.-70.	1.04	1.-2.	-----------	2.32	16.00	C- 901
68.81	65.-70.	3.71	1.-3.	-----------	0.42	14.50	C- 938
70.18	40.-50.	2.45	30.-32.	-----------	0.78	14.50	C- 958

TABLE II.—LIME AND

Chemist's number.	Name of Manufacturer and Brand	Sample Taken From
	M. J. GROVE LIME CO., LIME KILN, MD.	
C-866	Hydrated Lime,	S. S. Baer, Sand Patch,
	INDUSTRIAL LIMESTONE CO., ALLENTOWN, PA.	
C-852	Bethlehem Brand Hydrated Lime,	Kemerer Hardware Co., Lehighton,
	LEBANON FERTILIZER WORKS, LEBANON, PA.	
C-959	Levan's Lebanon Valley Hydrated Lime.	I. G. Washburn, Millville,
	THE LEGORS COMBINATION LIME CO., LEGORE, MD.	
C-954	Legores Refined Hydrated Lime,	Miller T. Harkins, Hickory Hill,
	JOHN D. OWENS & SON CO., OWENS, OHIO.	
C-968	Clover Leaf Brand Agricultural Hydrated Lime.	Clinton Pepper, West Brownsville,
	PALMER LIME & CEMENT COMPANY, YORK, PA.	
C-887	Challenge Brand Hydrated Lime,	G. W. Bamberger, Etters,
C-889	Challenge Brand Hydrated Lime,	C. F. Fendrich, Mercersburg,
C-952	Challenge Brand Hydrated Lime,	E. H. Keen & Son, Parkesburg,
C-967	Challenge Brand Hydrated Lime,	William C. Nash, Pipersville,
C-939	Challenge Brand Hydrated Lime,	S. C. Updegraff & Son, Williamsport,
	THE PARAGON PLASTER & SUPPLY CO., BLOOMSBURG, PA.	
C-860	Paragon Hydrated Lime,	Abington Lumber Co., Dalton
C-921	Paragon Hydrated Lime,	Hull Brothers, Waymarth,
C-920	Paragon Hydrated Lime,	E. B. Jermyn, Waymarth,
	READING CHEMICAL CO., READING, PA.	
C-864	Snow Flake Brand Hydrated Lime,	Irwin B. Adam, Hamburg,
C-913	Snow Flake Brand Hydrated Lime,	Frank Meck Hamburg,
C-851	Snow Flake Brand Hydrated Lime,	Samuel Savidge, Valley View,
C-929	Snow Flake Brand Hydrated Lime,	Samuel Savidge, Valley View,
C-900	Snow Flake Brand Hydrated Lime,	J. Lyman Snyder, Eldredsville,
	ROBERT A. REICHARD, ALLENTOWN, PA.	
C-943	Reichard's Lehigh Hydrated Lime,	Frank L. Entz, Montoursville,
	ROSE POINT STONE & LIME CO., NEW CASTLE, PA.	
C-969	Peerless Hydrated Lime,	J. G. Cover, Masontown,
C-906	Peerless Hydrated Lime,	Hibner-Hoover Hardware Co. DuBois,
C-895	Peerless Hydrated Lime,	D. G. Ramsey & Sons, New Castle,
C-884	Peerless Hydrated Lime,	Titusville Supply Co., Titusville,
C-902	Rose Point Hydrated Lime,	Thos. J. Neefe, Coudersport,
C-867	Rose Point Hydrated Lime,	Cinton Pepper, West Brownsville,
	THE SCIOTA LIME & STONE CO., DELAWARE OHIO.	
C-896	The Clover Grower Agricultural Hydrated Lime.	Harbison & Yahn, Ellwood City,
	SECURITY CEMENT & LIME COMPANY, HAGERSTOWN, MD.	
C-916	Berkley Hydrated Lime,	Francis Baker, Everett,
C-931	Berkley Hydrated Lime,	N. B. Sheber, Garret,

HYDRATED LIME—Continued.

Calcium Oxide.		Magnesium Oxide.		Carbon Dioxide	Insoluble Matter.	Selling price per ton at place of selection.	Chemist's number.
Found.	Guaranteed.	Found.	Guaranteed.				
%	%	%	%	%	%	$	
52.54	50.00	8.26	1.00	------------	11.10	14.50	C- 866
67.00	65.–70.	7.62	3.–6	------------	1.30	20.00	C- 852
71.17	65.-70.	2.03	3.–6.	------------	0.70	15.00	C- 959
56.46	50.-75.	3.48	1.–5.	------------	5.24	13.50	C- 954
56.43	--------------	15.46	------------	------------	1.90	13.25	C- 968
69.25	65.00	4.15	6.00	------------	0.86	------------	C- 887
67.67	65.00	3.91	6.00	------------	1.00	14.00	C- 889
69.48	70.00	3.03	3.00	------------	0.90	14.00	C- 952
71.27	70.00	1.77	3.00	------------	0.64	14.25	C- 967
64.07	65.00	7.98	6.00	------------	1.32	14.50	C- 939
63.01	63.67	1.63	2.00	------------	0.70	16.50	C- 860
61.96	63.67	1.95	2.00	------------	2.74	16.00	C- 921
60.68	63.67	1.90	2.00	------------	2.12	16.50	C- 920
56.05	65.-70.	11.00	3.-6.	------------	5.80	14.40	C- 864
58.91	65.-70.	12.41	3.-6.	------------	2.76	10.50	C- 913
61.73	65.-70.	7.60	3.-6.	------------	4.00	15.00	C- 851
58.96	65.-70.	13.24	3.-6.	------------	3.18	------------	C- 929
58.39	65.-70.	9.20	3.-6.	------------	3.78	16.77	C- 900
65.57	65.-70.	2.39	3.-6.	------------	4.40	14.00	C- 943
55.47	55.00	0.94	1.50	------------	11.80	14.00	C- 969
53.56	55.00	1.14	1.50	------------	10.02	------------	C- 906
56.34	55.00	1.21	1.50	------------	10.08	22.00	C- 895
53.09	55.00	1.51	1.50	------------	11.22	14.00	C- 884
55.63	55.00	1.11	1.50	------------	10.89	14.50	C- 902
54.76	55.00	1.32	1.50	------------	12.86	14.00	C- 867
64.22	--------------	7.97	------------	------------	1.58	------------	C- 896
64.53	70.00	1.77	2.00	------------	0.70	15.00	C- 916
69.69	70.00	1.72	2.00	------------	0.70	14.00	C- 931

TABLE II. LIME AND

Chemist's number.	Name of Manufacturer and Brand	Sample Taken From
	THE STANDARD LIME & STONE COMPANY, BUCKEYSTOWN, MD.	
C-890	Standard Hydrated Lime,	P. J. Briggs, Mt. Union,
C-923	Standard Hydrated Lime,	S. A. Fishburn, Penbrook,
C-848	Standard Hydrated Lime,	E. W. Rupp, Shirmanstown
C-955	Standard Hydrated Lime,	Sheehan Brothers, Landenberg,
	STEACY & WILTON COMPANY, WRIGHTSVILLE, PA.	
C-874	Sterling Brand Hydrated Lime,	Ajax Supply Co., Lancaster,
C-875	Sterling Brand Hydrated Lime,	William B. Barnitz, Carlisle,
C-865	Sterling Brand Hydrated Lime,	J. W. Hartman, Greencastle,
	TIDEWATER PORTLAND CEMENT COMPANY, BALTIMORE, MD.	
C-950	Tidewater Hydrated Lime,	G. R. Thompson & Son, Gettysburg,
		Average.
	HYDRATED LIME	
	(HIGH MAGNESIA)	
	J. E. BAKER CO., YORK, PA.	
C-976	Susquehanna Brand Hydrated Lime,	Golden Leader Milling Co., Middletown,
C-977	Susquehanna Brand Hydrated Lime,	C. Ober, Middletown,
	G. & W. H. CORSON, PLYMOUTH MEETING, PA.	
C-948	Corson's Prepared Lime,	E. A. Beck, Lehighton,
	DIETRICK BROTHERS, READING, PA.	
C-961	Dietrick's Gold Medal Brand Hydrated Lime.	T. J. Helm, Auburn,
	KNICKERBOCKER LIME COMPANY, PHILADELPHIA, PA.	
C-957	Knickerbocker Hydrated Lime,	H. B. Leedom, Bethayres,
C-877	Knickerbocker Hydrated Lime,	M. C. Michiner, Media,
	F. W. TUNNELL & CO., INC., PHILADELPHIA, PA.	
C-917	Philadelphia Hydrated Lime,	Fred Ehrhardt, Newfoundland,
	CHARLES WARNER COMPANY, WILMINGTON, DEL.	
C-911	Warner's Limoid,	Geo. W. Amey, Richlandtown,
C-930	Warner's Limoid,	Morris C. Bohn, Bernville,
C-880	Warner's Limoid,	A. F. Kimmel, Orwigsburg,
C-878	Warner's Limoid	Wm. J. Neal, Newton Square,
C-850	Warner's Limoid,	John H. Neff, Robesonia,
		Average.

HYDRATED LIME—Concluded.

Calcium Oxide.		Magnesium Oxide.					
Found.	Guaranteed.	Found.	Guaranteed.	Carbon Dioxide	Insoluble Matter.	Selling price per ton at place of selection.	Chemist's number.
%	%	%	%	%	%	$	
70.35	70.00	2.10	2.00	------------	2.30	20.00	C- 890
69.82	70.00	2.48	2.00	------------	1.64	14.50	C- 923
68.85	70.00	1.49	2.00	------------	2.80	15.00	C- 848
69.85	70.00	2.75	2.00	------------	1.70	13.50	C- 955
66.73	65.00	4.92	2.50	------------	2.58	14.00	C- 874
66.88	65.-73.5	5.55	2.5-6.	------------	1.96	14.00	C- 875
63.93	65.-73.5	5.40	2.5-6.	------------	2.50	14.00	C- 865
68.24	71.5-72.0	1.19	0.5-1.75	------------	1.50	12.50	C- 950
63.67	------------	4.22	------------	------------	3.55	$ 14.81	------------
44.26	50.-70.	27.66	2.-10.	------------	4.20	14.00	C- 976
41.23	50.-70.	27.78	2.-10.	------------	6.60	15.00	C- 977
43.12	42.-47.	28.92	27.-29.	------------	2.14	13.75	C- 948
45.54	46.-50.	27.99	30.-32.	------------	1.84	------------	C- 961
46.57	45.00	30.60	30.00	------------	1.60	17.25	C-957
47.28	45.00	32.31	30.00	------------	1.10	15.00	C- 877
45.38	46.-50.	25.44	30.-32.	------------	1.52	17.90	C- 917
42.98	42.-46.	29.76	28.-31.	------------	1.65	18.00	C- 911
47.36	42.-46.	31.73	28.-31.	------------	1.72	13.00	C- 930
46.81	42.-46.	32.94	28.00	------------	1.14	15.00	C- 880
46.56	42.-46.	31.76	28.-31.	------------	1.50	15.00	C- 878
45.51	42.-46.	31.94	28.-31.	------------	1.60	15.00	C- 850
45.21	------------	29.90	------------	------------	2.21	$ 15.35	------------

TABLE III.—GYPSUM

Chemist's number.	Name of Manufacturer and Brand	Sample Taken From
	THE AMERICAN AGRICULTURAL CHEMICAL CO., NEW YORK, N. Y.	
C- 876	Fine Ground Nova Scotia Plaster, ------	G. R. Clark, Scranton, ----------------
C- 949	Fine Ground Nova Scotia Plaster, -----	C. Travis, East Stroudsburg, ------------
C- 849	Ground Land Plaster, ------------------	Dillsburg Grain & Milling Co., Dillsburg,
	BAUGH & SONS COMPANY, PHILADELPHIA, PA.	
C- 888	Baugh's Pure Ground Land Plaster, ----	M. J. Sheffer, Hanover, ----------------
	THE CENTRAL CHEMICAL COMPANY, HAGERSTOWN, MD.	
C- 855	Land Plaster, ---------------------------	Francis Baker, Everett, ----------------
		Average.

OR LAND PLASTER.

Moisture.	Calcium Oxide		Sulphur Trioxide		Gypsum (Estimated $CaSO_4$)		Insoluble Matter.	Selling price per ton at place of selection.	Chemist's number.
	Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.			
%	%	%	%	%	%	%	%	$	
3.45	33.50	32.95	37.32	----------	80.25	80.00	5.40	24.00	C- 876
0.70	33.96	32.95	44.86	45.00	96.47	----------	1.40	24.00	C- 949
1.85	30.77	30.48	40.54	45.00	87.18	74.00	3.50	16.50	C- 849
0.17	30.70	32.00	41.20	46.00	88.60	----------	7.40	22.00	C- 888
6.00	27.36	25.00	36.36	34.00	78.19	----------	13.40	18.00	C- 855
2.43	31.26	----------	40.06	----------	86.14	----------	6.22	$ 20.90	----------